

CLAIMS

1. An expandable surgical retractor comprising:
 - a central rod with a first end and a second end;
 - an end receptacle that articulates with the second end;
 - 5 a plurality of anchoring plates slidably articulated to the central rod wherein each anchoring plate contains a plurality of openings;
 - a plurality of flexible wires each with a proximal end and a distal end which may be placed in the plurality of openings; and
 - a locking mechanism at each opening in the plurality of openings.
- 10 2. The expandable surgical retractor of claim 1, wherein the flexible wires may be selectively introduced into the openings of the anchoring plates and end receptacle.
3. The expandable surgical retractor of claim 1, wherein a central opening for articulation with the central rod is situated at the epicenter of the plurality of openings.
4. The expandable surgical retractor of claim 1, wherein the central rod slidably articulates
15 with the anchoring plates through the central opening.
5. The expandable surgical retractor of claim 1 wherein the anchoring plates, central rod, flexible wires and/or the end receptacle are composed of fiber optic material.
6. The expandable surgical retractor of claim 3, wherein the central opening has a diameter larger than a diameter of the central rod.
- 20 7. The expandable surgical retractor of claim 3, wherein the openings in the plurality of surrounding openings have a diameter larger than a diameter of the flexible wires.
8. The flexible wires of claim 1 wherein the distal end of the flexible wire is bulbous and blunt.

9. The expandable surgical retractor of claim 1, wherein the locking mechanism may be selected from the group consisting pinch slits, threaded locking devices, loops, hooks, clamps and wire shape.

10. The expandable surgical retractor of claim 9, wherein the locking mechanism may be located in the anchoring plate, the end receptacle or both.

11. The expandable surgical retractor of claim 1 wherein the central rod is solid.

12. The expandable surgical retractor of claim 1 wherein the central rod is hollow.

13. The expandable surgical retractor of claim 1 wherein the expandable surgical retractor is removably attachable to a stand.

14. An expandable surgical retractor comprising:
a fiber optic central rod with a first end and a second end;
an end receptacle that articulates with the second end;
a plurality of anchoring plates slidably articulated to the central rod wherein each anchoring plate contains a plurality of openings;

a plurality of flexible wires each with a proximal end and a distal end which may be placed in the plurality of openings; and
a locking mechanism at each opening in the plurality of openings.

15. The expandable surgical retractor of claim 14, wherein the flexible wires may be selectively introduced one by one into openings of the anchoring plates and end receptacle.

16. The expandable surgical retractor of claim 14 wherein the anchoring plates, flexible wires and/or the end receptacle are made of fiber optic material.

17. The expandable surgical retractor of claim 14, wherein a central opening for articulation with the central rod is situated at the epicenter of the plurality of openings.

18. The expandable surgical retractor of claim 14, wherein the central rod slidably articulates with the anchoring plates via the central opening.

19. The expandable surgical retractor of claim 18, wherein the central opening has a diameter larger than a diameter of the central rod.

5 20. The expandable surgical retractor of claim 19 wherein the openings in the plurality of surrounding openings have a diameter larger than a diameter of the flexible wires.

21. The expandable surgical retractor of claim 14, wherein the distal end of the flexible wire is bulbous and blunt.

22. The expandable surgical retractor of claim 14, wherein the locking mechanism may be
10 selected from the group consisting of pinch slits, threaded locking devices, loops, hooks, clamps and wire shape.

23. The expandable surgical retractor of claim 14, wherein the locking mechanism may be located in the anchoring plate, the end receptacle or both.

24. The expandable surgical retractor of claim 14 wherein the central rod is solid.

15 25. The expandable surgical retractor of claim 14 wherein the central rod is hollow.

26. The expandable surgical retractor of claim 14 wherein the expandable surgical retractor is removably attachable to a stand.

27. An expandable surgical retractor kit containing:

a positioning device for a plurality of flexible wires;

20 a plurality of anchoring plates each of which contains a central opening surrounded by a plurality of openings;

a plurality of flexible wires each with a proximal end and a distal end;

a locking mechanism for the flexible wires for each opening in the plurality of openings;
and
instructions for assembly and use.

28. The kit of claim 27, wherein the plurality of anchoring plates, plurality of flexible wires,
5 central rod and/or the end receptacle are made of fiber optic material.

29. The kit of claim 27, wherein the plurality of anchoring plates are supplied in multiples of
two where at least two anchoring plates within the multiple of anchoring plates have equal
diameter.

30. The kit of claim 27 wherein the anchoring plates range in diameter from 0.5 cm to 10 cm
10 in increments of 0.5 cm.

31. The kit of claim 27, wherein the central rod with an end receptacle, multiple of anchoring
plates and flexible wires are made of disposable material.

32. The kit of claim 27, wherein the locking mechanism may be selected from the group
consisting of pinch slits, threaded locking devices, loops, hooks, clamps and wire shape.

15 33. The kit of claim 27 wherein the positioning device for a plurality of wires is removably
attachable to a stand.

34. An expandable surgical retractor comprising:

a central rod with a first end and a second end;

a plurality of anchoring plates slidably articulated to the central rod wherein each

20 anchoring plate contains a central a plurality of openings;

a distal anchoring plate which articulates with the second end of the central rod;

a plurality of flexible wires each with a proximal end and a distal end which may be
placed in the plurality of openings;

a functional articulation point at the distal end of the flexible wires; and
a locking mechanism at each opening in the plurality of openings.

35. The expandable surgical retractor of claim 34, wherein the flexible wires may be selectively introduced into the openings of the anchoring plates.

5 36. The expandable surgical retractor of claim 34, wherein a central opening for articulation with the central rod is situated at the epicenter of the plurality of openings.

37. The expandable surgical retractor of claim 34, wherein the central rod slidably articulates with the anchoring plates through the central opening.

38. The expandable surgical retractor of claim 34 wherein the central rod and flexible wires
10 are composed of fiber optic material.

39. The expandable surgical retractor of claim 34, wherein the central opening has a diameter larger than a diameter of the central rod.

40. The expandable surgical retractor of claim 34, wherein the openings in the plurality of surrounding openings have a diameter larger than a diameter of the flexible wires.

15 41. The flexible wires of claim 34 wherein the functional articulation point is a point for a meeting and articulation of two or more flexible wires.

42. The functional articulation point of claim 41 wherein the meeting and articulation of two or more wires is accomplished with an articulation mechanism.

43. The functional articulation point of claim 42 wherein the articulation mechanism is
20 selected from the group consisting of friction fits, threaded members, hooks, loops and ball and socket articulations.

44. The expandable surgical retractor of claim 34, wherein the locking mechanism may be selected from the group consisting pinch slits, threaded locking devices, loops, hooks, clamps and wire shape.

45. The flexible wires of claim 41 wherein the meeting and articulation of two or more

5 flexible wires creates a cup formation.

46. The expandable surgical retractor of claim 34 wherein the central rod is solid.

47. The expandable surgical retractor of claim 34 wherein the central rod is hollow.

48. The expandable surgical retractor of claim 34 wherein the expandable surgical retractor is removably attachable to a stand.

10 49. An expandable surgical retractor comprising:

a central rod with a first end and a second end;

a plurality of channels around the central rod;

a distal anchoring plate which articulates with the second end of the central rod;

a plurality of flexible wires each with a proximal end and a distal end which may be

15 placed in the plurality of channels;

a functional articulation point at the distal end of the flexible wires; and

a locking mechanism at each opening in the plurality of openings.

50. The expandable surgical retractor of claim 49, wherein the flexible wires may be selectively introduced into the openings of the anchoring plates.

20 51. The expandable surgical retractor of claim 49, wherein a central opening for articulation with the central rod is situated at the epicenter of the plurality of openings.

52. The expandable surgical retractor of claim 49, wherein the central rod slidably articulates with the anchoring plates through the central opening.

53. The expandable surgical retractor of claim 49 wherein the central rod and flexible wires are composed of fiber optic material.

54. The expandable surgical retractor of claim 51, wherein the central opening has a diameter larger than a diameter of the central rod.

5 55. The expandable surgical retractor of claim 51, wherein the openings in the plurality of surrounding openings have a diameter larger than a diameter of the flexible wires.

56. The flexible wires of claim 49 wherein the functional articulation point is a point for a meeting and articulation of two or more flexible wires.

10 57. The functional articulation point of claim 56 wherein the meeting and articulation of two or more wires is accomplished with an articulation mechanism.

58. The functional articulation point of claim 57 wherein the articulation mechanism is selected from the group consisting of friction fits, threaded members, hooks, loops and ball and socket articulations.

15 59. The expandable surgical retractor of claim 49, wherein the locking mechanism may be selected from the group consisting pinch slits, threaded locking devices, loops, hooks, clamps and wire shape.

60. The flexible wires of claim 56 wherein the meeting and articulation of two or more flexible wires creates a cup formation.

61. The expandable surgical retractor of claim 49 wherein the central rod is solid.

20 62. The expandable surgical retractor of claim 49 wherein the central rod is hollow.

63. The expandable surgical retractor of claim 49 wherein the expandable surgical retractor is be removably attachable to a stand.

64. An expandable surgical retractor comprising:

a handle with an aperture;

a plurality of openings in the aperture;

a plurality of flexible wires which fit in the openings in the aperture; and

65. The expandable surgical retractor of claim 64 wherein the flexible wires enter one
5 opening of the aperture and exit a separate opening of the aperture.

66. The expandable surgical retractor of claim 64 wherein the flexible wires enter and exit
only one opening of the aperture.

67. The expandable surgical retractor of claim 64 wherein the handle comprises a light
source.

10 68. The expandable surgical retractor of claim 64 wherein the handle may be adapted to fit a
selected area of anatomy.

69. The expandable surgical retractor of claim 64 wherein the handle may be removably
attached to a stand.